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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,129	04/11/2005	Satoshi Saito	03419.0023-00	8898

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EXAMINER	
LONG, SCOTT	

ART UNIT	PAPER NUMBER
1633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/507,129	SAITO ET AL.	
	Examiner	Art Unit	
	Scott D. Long	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 16-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 16-18* is/are rejected.

7)☒ Claim(s) *3-7, 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/04; 7/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Status

Claims 1-7 and 16-18 are pending. Claim 8-15 and 19 is cancelled. Claims 1-7 and 16-18 are under current examination.

Sequence Compliance

Sequence Listing and CRF have been received and are acknowledged by examiner. A statement that the Computer Readable Form (CRF) and the Sequence Listing are identical has been submitted and is acknowledged by examiner.

Oath/Declaration

The oath or declaration, having the signatures of all inventors, received on 11 April 2005 is in compliance with 37 CFR 1.63.

Information Disclosure Statement

The Information Disclosure Statements (IDS) filed on 10 September 2004 and 31 July 2006 consisting of 2 sheets are in compliance with 37 CFR 1.97. Accordingly, examiner has considered the Information Disclosure Statements.

Priority

This application claims benefit as a 371 of PCT/JP03/02833 0 (filed 3/11/2003). This application also claims benefit from the foreign application JAPAN 2002-065880

(filed 03/11/2002). Because an English translation of the foreign application JAPAN 2002-065880 has not been provided, the instant application has been granted the benefit date, 3/11/2003, from the application PCT/JP03/02833 0.

Specification

The specification is objected to because: There is no SEQ ID NO recited on pages 2, 3, 4, 6, 10, 11, 13, 17, when referring to the amino acid sequences and nucleic acid sequences. MPEP 2422; 37 CFR 1.821(2)(d).

The specification contains sequence disclosures (pages 2, 3, 4, 6, 10, 11, 13, 17) that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.82(a)(1) and (a)(2) but are not present in the Sequence Listing and/or identified in the specification by sequence identifier numbers. Applicant must provide sequence identifiers, in the case that these sequence identifier numbers. Applicant must provide sequence identifiers, in the case that these sequences are not included in the original sequence submission, a paper copy and a computer readable copy of the sequence Listing and a statement that the content of the paper and computer readable copies are the same and were applicable, include no new matter, as required by 37 CFR 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d). A full response to this Office Action must include complete response to the requirement for a Sequence Listing.

Drawings

The drawings are objected to because: Figure 9 includes crossed lead lines.

37 CFR 1.84 (q) Standards for drawings - Lead lines . Lead lines are those lines between the reference characters and the details referred to. Such lines may be straight or curved and should be as short as possible. They must originate in the immediate proximity of the reference character and extend to the feature indicated. Lead lines must not cross each other. Lead lines are required for each reference character except for those which indicate the surface or cross section on which they are placed. Such a reference character must be underlined to make it clear that a lead line has not been left out by mistake. Lead lines must be executed in the same way as lines in the drawing. See paragraph (l) of this section.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 6-7 and 17 are objected to because of the following informalities: The claims contain the word, "Saccaromyces". This is a typographical error; the correct spelling is "Saccharomyces". Appropriate correction is required.

Claims 3-5 are objected to because of the following informalities: The claims contain the word, "sequence number". In order to comply with the sequence rules, these should be rewritten as "SEQ ID NO:" See MPEP 2422; 37 CFR 1.821(2)(d). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 and 16-18 are rejected because "incorporated by the promoter of the pyruvate decarboxylase" (as recited in line 6 of claim 1, for example) is unclear. Promoters do not normally have recombination activity. How is this possible? Clarification is required.

Claims 1and 16 recite the limitation "said promoter that replaces said promoter" in the last line of claim 1 and line 4 of claim 16. There is insufficient antecedent basis for this limitation in the claim. It is unclear which promoter is referred to by the repetition of the phrase, "said promoter".

Claim 16 recites the limitation "the bovine-derived lactate dehydrogenase" in lines 1-2 of claim 16. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites the limitation "the promoter" in line 3 of claim 16. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "the aforementioned process" in the last line of claim 18. It is unclear whether "the aforementioned process" refers to a process for culturing or a process for separating. Clarification is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

WRITTEN DESCRIPTION

Claims 1-7 and 16-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The methodology for determining adequacy of Written Description to convey that applicant was in possession of the claimed invention includes determining whether the

application describes an actual reduction to practice, determining whether the invention is complete as evidenced by drawings or determining whether the invention has been set forth in terms of distinguishing identifying characteristics as evidenced by other descriptions of the invention that are sufficiently detailed to show that applicant was in possession of the claimed invention (*Guidelines for Examination of Patent Applications under 35 USC § 112, p 1 "Written Description" Requirement;* (Federal Register/Vol 66. No. 4, Friday, January 5, 2001; II Methodology for Determining Adequacy of Written Description (3.)).

Claims 1 and 16 are broadly drawn, such that they apply to a genus of homologues of lactate dehydrogenase gene and homologues of pyruvate decarboxylase 1 promoters. However, the working examples provided in the instant application only demonstrate individual species of genes and promoters, specifically bovine-derived lactate dehydrogenase gene and Saccharomyces cerevisiae pyruvate carboxylase 1 promoter.

The instant specification teaches, "Furthermore, the foreign protein in the present invention includes homologues of these types of LDH. LDH homologues include proteins which has LDH activity, with one or several amino acids in an amino acid sequence of a naturally derived LDH replaced, void, inserted, and/or added; and proteins which also has LDH activity that are at least 70%, and more preferably at least 80%, homologous in their amino acid sequence to a naturally derived LDH." (parag.0011). Furthermore, the specification indicates that the homologues of lactate dehydrogenase can have as little as 20% identity (parag.0011). The specification does

not describe which important structures must be included in the homologue in order to maintain function. See MPEP § 2163, which states "[A] biomolecule sequence described only by a functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, ***even when accompanied by a method of obtaining the claimed sequence."***

The specification indicates that homologues of Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter can be obtained through hybridization screening, using stringent conditions (paragraph 0024).

In addition, claims 1 and 16 are broadly drawn such that they encompass a genus of "transformants." The specification does not specifically define the word, transformant. However, on page 1, paragraph 0002, the specification states, "Due to advances in recombinant DNA technology, technologies have been developed that obtain the target gene product by making a foreign gene express itself in a host such as a microbe, mold, animal, plant, or insect, and growing the gene's transformant." The implication of this paragraph is that any microbe, mold, animal, plant, or insect which has been transformed with a foreign gene is a "transformant." The working examples of the instant specification only support enzymatic pathway engineering in yeast, particularly *S.cerevisiae.*

The Revised Interim Guideline for Examination of Patent Applications under 35 USC § 112, p1 "Written Description" Requirement (Federal Register/ Vol 66. No 4, Friday January 5, 2001) states "THE CLAIMED INVENTION AS A WHOLE MAY NOT BE

ADEQUATELY DESCRIBED IF THE CLAIMS REQUIRE AN ESSENTIAL OR CRITICAL ELEMENT WHICH IS NOT ADEQUATELY DESCRIBED IN THE SPECIFICATION AND WHICH IS NOT CONVENTIONAL IN THE ART" (column 3, page 71434), "WHEN THERE IS SUBSTANTIAL VARIATION WITHIN THE GENUS, ONE MUST DESCRIBE A SUFFICIENT VARIETY OF SPECIES TO REFLECT THE VARIATION WITHIN THE GENUS", "IN AN UNPREDICTABLE ART, ADEQUATE WRITTEN DESCRIPTION OF A GENUS WHICH EMBRACES WIDELY VARIANT SPECIES CANNOT BE ACHIEVED BY DISCLOSING ONLY ONE SPECIES WITHIN THE GENUS" (column 2, page 71436, emphasis added).

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states that "APPLICANT MUST CONVEY WITH REASONABLE CLARITY TO THOSE SKILLED IN THE ART THAT, AS OF THE FILING DATE SOUGHT, HE OR SHE WAS IN POSSESSION OF THE INVENTION. THE INVENTION IS, FOR PURPOSES OF THE 'WRITTEN DESCRIPTION' INQUIRY, *WHATEVER IS NOW CLAIMED*." (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize the [he or she] invented what is claimed." (See *Vas-Cath* at page 1116).

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481, 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

With respect to claims limiting a polynucleotide by hybridization conditions, even under relatively high stringent conditions, the claimed nucleotide sequence could hybridize to a genus of polynucleotides that are similar, but not identical to the recited polynucleotides. The limitation by hybridization is obviously generic to a considerable number of nucleotides varying in the length of the nucleic acids, the degree of

homologies among the sequences, and the biological activities of the promoter, which may or may not be involved in the function of pyruvate decarboxylase promoter activity. This genus also embraces sub-sequences that are unknown and include unsequenced polynucleotides, whose function is yet to be determined.

Considering the potentially large numbers of polynucleotides encompassed by these claims, the disclosure is not sufficient to show that a skilled artisan would recognize that the applicant was in possession of the claimed invention (genus) commensurate to its scope at the time the application was filed. In addition, the disclosure is not sufficient to show that a skilled artisan would recognize that the applicant was in possession of the claimed genus of "transformants" commensurate to its scope at the time the application was filed.

ENABLEMENT

Claims 16-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The factors to be considered in determining whether undue experimentation is required are summarized *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). The Court in *Wands* states: "Enablement is not precluded by the necessity for some

'experimentation.'" Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (*Wands*, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. While all of these factors are considered, a sufficient amount for a prima facie case is discussed below.

Nature of the Invention

The full scope of the claimed invention encompasses an enormous number of nucleic acids which could hybridize with Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter. The size of these hybridizing nucleic acids might be small, or equal in size to full-length Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter, or larger than Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter. The nucleic acids might also encompass very large nucleic acids that hybridize under highly stringent conditions only over a short range near one end of both sequences. In this case, there would be a very low level of homology between the two sequences, despite high stringency hybridization.

With respect to claims limiting a polynucleotide by hybridization conditions, even under relatively high stringent conditions, the claimed nucleotide sequence could hybridize to a genus of polynucleotides that are similar, but not identical to the recited polynucleotides. The limitation by hybridization is obviously generic to a considerable number of nucleotides varying in the length of the nucleic acids, the degree of homologies among the sequences, and the biological activities of the encoded polypeptides, which may or may not be involved in the function of Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter. This genus also embraces sub-sequences that are unknown and include unsequenced polynucleotides, whose function is yet to be determined.

Working Examples and Guidance Provided

The specification indicates that any DNA which hybridizes to SEQ ID NO:2 could be considered a homologue of the Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter (parag.0024). There are no working examples of nucleic acids that have been isolated through the stringent hybridization method. Furthermore, there are no examples of nucleic acid sequences described in the specification that conform to the limitations of claim 16 directed to homologues.

State of the Art and Analysis of the Issues

A skilled artisan would not know how to make a nucleic acid which corresponds to the large number of species of nucleic acid encompassed by Claim 16. Some of the

nucleic acids that fit within the genus of Claim 16 would not be homologues of Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter (SEQ ID NO:2). In fact, despite hybridizing under high stringency conditions, these molecules would be structurally and functionally unrelated to Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter (SEQ ID NO:2). Sequences which fit into this class of unrelated molecules would require further research in order for an artisan to learn how to use them. Furthermore, the artisan would have no reason to make such sequences.

Wolcott (CLINICAL MICROBIOLOGY REVIEWS, Oct. 1992, p. 370-386) teaches "hybridization...is subject to...nonspecific background interference" (page 372, column 1) and "hybridization studies...produced...false-positive reactions" (page 371, column 2). Walcott further teaches "short probes...are subject to more nonspecific hybridizations, are limited in specificity, and are more difficult to label....Long probes hybridize more stably than short probes at high temperatures and low salt concentrations (low stringency)." (page 371, column 2). Gress et al. (*Mammalian Genome 3:* 609-619, 1992) teach, "complex probes usually generate a high amount of background and unspecific hybridization." (page 610, column 1). The teachings of Wolcott and Gress et al. cast doubt on the homology of the sequences derived through hybridization methods. If sequences that hybridize under stringent conditions are not homologous or functionally related to those sequences of the genus of claim 16, then there is surely difficulty for the artisan to make and/or use these sequences. Or if the amount of relatedness of the hybridizing sequence to SEQ ID NO:2 (Saccharomyces cerevisiae pyruvate decarboxylase 1 promoter) is only comprises a single domain, then

the artisan would likewise encounter difficulty in using these sequences and would be required to perform further investigation to find a utility for these discovered sequences.

Therefore, the quantity of experimentation required to make and/or use the invention, as claimed, is insufficient to enable the invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 6-7 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Porro et al (US-6,429,006; issued 6 August 2002).

Claim 1 is directed to a transformant into which has been incorporated a DNA for coding a foreign protein having lactate dehydrogenase activity and provided with pyruvic acid substrate affinity that equals or exceeds the pyruvic acid substrate affinity of the pyruvate decarboxylase inherent in the host organism, wherein the DNA for coding the aforementioned foreign protein has been controllably incorporated by the promoter of the pyruvate decarboxylase gene on the host chromosome or by a homologue of said promoter that replaces said promoter. Porro et al. teach, "yeast strains...transformed with at least one copy of a gene coding for lactic dehydrogenase (LDH) functionally linked to promoter sequences allowing the expression of said gene in yeasts" (col.2, lines 30-35). Porro et al. teach, "yeast strains having...a reduced pyruvate decarboxylase activity and transformed with...a gene coding for lactic dehydrogenase (LDH) functionally linked to promoter sequences" (col.2, lines 36-40). Porro et al. teach any yeast promoter...may be used according to the invention...the promoter of pyruvate decarboxylase gene of K. lactis (KlPDC) is particularly preferred (col.7, lines 1-10). Porro et al. further teach, "Pyruvate decarboxylase gene promoters...are particularly preferred" (col.7, lines 15-17). Porro et al. describe making a triple deletion of the pyruvate decarboxylase genes encoding PDC1, PDC5, and PDC6, using homologous recombination (col.16, lines 54-67 and col.17, lines 1-20). Porro et al. further teach that "PDC genes are highly conserved among different yeast genera" (col.4, lines 44-45), suggesting that the invention of Porro et al. satisfy all the limitations of claim 1.

Claim 2 is directed to the transformant according to claim 1, wherein the aforementioned foreign protein is a bovine-derived lactate dehydrogenase or its homologue. Porro et al. teach, "the gene coding for lactate dehydrogenase may be of any species (e.g. mammalian, such as bovine)" (col.5, lines 27-28).

Claim 3 is directed to the transformant according to claim 1, wherein the aforementioned foreign protein is a protein comprised of the amino acid sequence shown in sequence number 1 or its homologue. SEQ ID NO:1 is the bovine lactate dehydrogenase gene. Clearly, Porro et al. contemplates the amino acid encoded this gene or its homologue. Porro et al. teach, "the gene coding for lactate dehydrogenase may be of any species (e.g. mammalian, such as bovine)" (col.5, lines 27-28).

Claim 4 is directed to the transformant according to claim 3, wherein the aforementioned foreign protein is coded by the DNA sequence shown in sequence number 3. Clearly, Porro et al. contemplates this gene or its homologue. Porro et al. teach, "the gene coding for lactate dehydrogenase may be of any species (e.g. mammalian, such as bovine)" (col.5, lines 27-28).

Claims 6 is directed to the transformant according to any of claims 1 through 5, wherein the aforementioned host organism belongs to the Saccharomyces family. Claim 7 is directed to the transformant according to any of claims 1 through 5, wherein the aforementioned host organism is Saccharomyces cerevisiae. Porro et al. teach transformed yeast, Saccharomyces cerevisiae.

Claim 16 is directed to a transformant into which the DNA for coding the bovine-derived lactate dehydrogenase or its homologue has been controllably incorporated by

the promoter of the pyruvate decarboxylase 1 gene on the host chromosome of the Saccharomyces family or by a homologue of said promoter that replaces said promoter, and wherein the structural gene of the pyruvate decarboxylase 1 on the host chromosome has been destroyed. Porro et al. teach, "yeast strains...transformed with at least one copy of a gene coding for lactic dehydrogenase (LDH) functionally linked to promoter sequences allowing the expression of said gene in yeasts" (col.2, lines 30-35). Porro et al. teach, "yeast strains having...a reduced pyruvate decarboxylase activity and transformed with...a gene coding for lactic dehydrogenase (LDH) functionally linked to promoter sequences" (col.2, lines 36-40). Porro et al. teach any yeast promoter...may be used according to the invention...the promoter of pyruvate decarboxylase gene of K. lactis (KlPDC) is particularly preferred (col.7, lines 1-10). Porro et al. further teach, "Pyruvate decarboxylase gene promoters...are particularly preferred" (col.7, lines 15-17). Porro et al. describe making a triple deletion of the pyruvate decarboxylase genes encoding PDC1, PDC5, and PDC6, using homologous recombination (col.16, lines 54-67 and col.17, lines 1-20). Porro et al. further teach that "PDC genes are highly conserved among different yeast genera" (col.4, lines 44-45), suggesting that the invention of Porro et al. satisfy all the limitations of claim 16.

Claim 17 is directed to the transformant according to claim 16, wherein the aforementioned host is Saccharomyces cerevisiae. Porro et al. teach transformed yeast, Saccharomyces cerevisiae.

Claim 18 is directed to a lactic acid manufacturing method provided with a process for culturing the transformant described in claim 1, and a process for separating

lactic acid from the cultured product obtained in the aforementioned process. Porro et al. teach, "a process for the preparation of...lactic acid by culturing the above described metabolically engineered yeast strains in a fermentation medium containing a carbon source and recovering lactic acid from the fermentation medium" (col.2, lines 54-58).

Therefore Porro et al. anticipated the instant claims.

Claims 1-4, 6-7 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Porro et al (WO99/14335, published 25 March 1999).

Since Porro et al (US-6,429,006; issued 6 August 2002) as cited above in the 35 USC 102(e) rejection is a National Stage application of (WO99/14335, published 25 March 1999), all of the teachings described above are also taught by Porro et al. in WO99/14335.

Therefore Porro et al. anticipated the instant claims.

Conclusion

No claims are allowed.

Examiner Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Scott Long** whose telephone number is **571-272-9048**. The examiner can normally be reached on Monday - Friday, 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Joseph Woitach** can be reached on **571-272-0739**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JLE